## Section-A (MCQ's)

**Q.1 Choose the correct answer for each from the given options:**

(i) $\begin{bmatrix} 5 & 0 \\ 0 & 7 \end{bmatrix}$ is a _______ matrix.
(a) Digonal (b) Scalar (c) Rectangular (d) Column

(ii) The mean of 30 observations is 100, their sum is _______.
(a) 900 (b) 1000 (c) 1500 (d) 3000

(iii) The polynomial expression $-\frac{1}{4}+2x+5$ w.r.t the terms is called _______.
(a) Monomial (b) Bionomial (c) Trinomial (d) None of these

(iv) $\log_a 1 =$ _______.
(a) 1 (b) a (c) 0 (d) 10

(v) An inscribed angle of a major arc is _______
(a) Acute (b) Obtuse (c) 90° (d) None of these

(vi) $x^3y^6+125=$ _______
(a) $(xy^2-5)(x^2y^4+5xy^2+25)$ (b) $(xy^2+5)(x^2y^4-5xy^2+25)$
(c) $(xy^2+5)(x^2y^4+5xy^2+25)$ (d) $(xy^2-5)(x^2y^4-5xy^2+25)$

(vii) The sub-duplicate ratio of 4:9 is _______.
(a) 16 : 81 (b) 2 : 3 (c) Both (a) & (b) (d) None of these

(viii) Cot 60° = _______.
(a) $\frac{1}{\sqrt{3}}$ (b) $\sqrt{3}$ (c) $\frac{\sqrt{3}}{2}$ (d) 1

(ix) $(A\cup B)'=$ _______
(a) $(A\cap B)'$ (b) $A'\cup B'$ (c) $A'\cap B'$ (d) None of these

(x) An angle with measure greater than 90° is called _______ angle.
(a) Right (b) Congruent (c) Acute (d) Obtuse

(xi) x + 1 = 0, is a _______ equation.
(a) Quadratic (b) LInear (c) Non- Linear (d) Irrational

(xii) In triangle ABC, $m\angle B=90^0$ than $a^2+c^2=$ _______.
(a) $a^2$ (b) $-a^2$ (c) $-b^2$ (d) None of these

(xiii) $\sqrt[n]{x^m}=$ _______.
(a) $x^{mn}$ (b) $x^{n/m}$ (c) $x^{m+n}$ (d) $x^{m/n}$

(xiv) Line segment joining the vertex and to the mid-point of the opposite side of traingle is called _______.
(a) Altitude (b) Hypotenuse (c) Median (d) None of these

(xv) The characteristic of log 0.0000225 is _______.
(a) 4 (b) 5 (c) -4 (d) -5

(xvi) $(a+b)^2+(a-b)^2=$ _______.
(a) 4ab (b) -4ab (c) $2(a^2+b^2)$ (d) $2(a+b)^2$

(xvii) The order of $\begin{bmatrix} a \\ b \end{bmatrix}$ is _______.
(a) 2 x 1 (b) 1 x 2 (c) 1 x 1 (d) 2 x 2

(xviii) (3, -2) is in _______ quadrant.
(a) First (b) Second (d) Third (d) Fourth

(xix) If $A=\begin{bmatrix} 6 & 4 \\ 3 & 2 \end{bmatrix}$, then $|A|=$ _______.
(a) 6 (b) 4 (c) 2 (d) 0

(xx) |-5| absolute value of -5 is _______.
(a) -5 (b) ±5 (c) 5 (d) None of these

## Section-B

**Note: Solve any TEN of the following questions. Each question carries 05 marks.**

Q.2 Find the value of x - y when x + y = - 9 and xy = 20.

Q.3 Find the factors of $a^2(b-c)+b^2(c-a)+c^2(a-b)$.

Q.4 If A = {1, 2, 3, 4}, find the two sets B and C that are subset of A such that $B\subseteq C$.

Q.5 Prove that $\cot\theta+\tan\theta=\cot\theta\sec^2\theta$

Q.6 Find the logarithm of 125 to the base $5\sqrt{5}$.

Q.7 Discuss the advantages of tabulation and classification.

Q.8 Simplify $\frac{4}{x^2-4x-5}+\frac{8}{x^2-1}$

Q.9 if x + 7 : 2 ( x + 14) is the duplicate ratio of 5 : 8 , find the value of x.

Q.10 Find the solution set of |5y - 3| - 6 = 3.

Q.11 Prove that, the sum of measures of the angles of a triangle is 180°.

Q.12 Eliminate 'y' from the equation : $y+\frac{1}{y}=b$ and $y^3+\frac{1}{y^3}=a^3$

Q.13 If $y=\sqrt{5}-2$, find the value of $y^2-\frac{1}{y^2}$

Q.14 Find the inverse of $\begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$

Q.15 Define any ONE of the following terms and illustrate by drawing figure.
Adjacent angles, Vertically opposite angles

## Section-C

**Note: Solve any TWO of the following questions. Each question carries 15( 8 + 7) marks.**

Q.16 (a) Solve by using logarithm: $\frac{\sqrt{673.3}}{\sqrt[3]{58.4}}$

(b) Simplify: $\frac{4^m\times15^{4m-2n+1}\times9^{n-2m}}{10^{2m}\times25^{m-n}}$

Q.17 (a) Consturct a triangle ABC in which $m\overline{AB}=4.5cm, m\overline{BC}=5cm,\ m\angle B=60^0$ and draw its circumscribed.

(b) Find the value of : $\frac{\tan30^\circ+\tan45^\circ}{1-\tan30^\circ\tan45^\circ}$

Q.18 (a) Solve the using matrics : 4x + y = 2 and 7x + 2y = 3.

(b) Prove that, congruent chords of a circle are equidistance form its centre.